JOURNAL OF APPLIED BEHAVIOR ANALYSIS 1987, 20, 401–404 NUMBER 4 (WINTER 1987)

CORRESPONDENCE BETWEEN DEFINITIONS AND PROCEDURES: A REPLY TO STOKES, OSNES, AND GUEVREMONT

A. CHARLES CATANIA, ELIOT SHIMOFF, AND BYRON A. MATTHEWS
UNIVERSITY OF MARYLAND BALTIMORE COUNTY

Stokes, Osnes, and Guevremont's (1987) implicit definition of correspondence classes appears close to ours (Matthews, Shimoff, & Catania, 1987). Their definition, however, is fundamentally procedural and thus may have to be modified as experimental methodologies are refined. The advantage of our contingency-space analysis is that it is independent of specific procedures and focuses attention on problems inherent in some procedural definitions. Specifically, a contingency-space analysis addresses the issue of distinguishing specific instances from classes and reminds us that correspondence can be identified as a class only on the basis of observing a population of opportunities for say/do sequences in which the subject sometimes does not say.

DESCRIPTORS: correspondence training, verbal behavior, contingency-space analysis, response classes, generalization

Formal definitions of verbal/nonverbal relations are important because the definitions affect both our experimental analyses and the interventions ultimately based on those analyses. We suggested (Matthews, Shimoff, & Catania, 1987) that correspondence as a class of verbal/nonverbal relations be defined as a high probability of doing given saying and a low probability of doing given not saying. In our account, consistent saying and subsequent doing do not, by themselves, imply correspondence; our definition also demands that not saying be consistently followed by not doing. Thus, to demonstrate correspondence experimentally, we must assess the probability of doing under two circumstances: following saying and following not saying. For these purposes, instances of not saying are relevant only following occasions for saying; for example, after the question "Will you play with the blocks?," not saying includes saying not ("I will not play with the blocks") and saying other ("I will play with the paints") as well as refusing to answer the question.

We believe that the following excerpts from our paper effectively summarize these points: ". . . it is important to distinguish an instance of say/do correspondence that is a member of a generalized class of such correspondences from a specific say/do sequence that may not be a member of a generalized class. . . . It is not enough to observe single instances of saying followed by doing. . . . Correspondence can be identified as a class only on the basis of observing a population of opportunities for say/do sequences in which the subject sometimes does not say" (Matthews et al., 1987, pp. 69–70). Furthermore, we do not believe that we and Stokes, Osnes, and Guevremont (1987) are very far apart; they seem often to agree implicitly with us, as when they say that "[the] study of saying and doing is more than just examining what a person says and then documenting the occurrence of the relevant behavior" (p. 161) or that correspondence can be examined in "replicated manipulations of saying and not saying . . ." (p. 163).

But the definition proposed by Stokes et al. (1987) and exemplified by Guevremont, Osnes, and Stokes (1986) is most readily described in terms of the procedural steps in their interventions: (a) baseline assessment of the probability of doing; (b) reinforcement of saying with no explicit consequences for subsequent doing; and (c) experimenter-prompted (but unreinforced) saying with consequences arranged for subsequent doing ("correspondence training"). It follows from our view,

Editor's Note: The above article is the third in a series of Discussion Articles focusing on correspondence between saying and doing. The first two articles in the series appeared in Vol. 20, Nos. 1 and 2.

For reprints, write A. Charles Catania, Department of Psychology, UMBC, 5401 Wilkens Avenue, Catonsville, Maryland 21228.

however, that correspondence classes should be defined independently of the procedures that were used to create them. Otherwise, the definition of these classes might change with each refinement of experimental methodology.

Consider some empirical questions that may be raised about the Guevremont et al. (1986) procedure. Does their last step (if successful in producing doing) necessarily imply correspondence? Perhaps not. Perhaps the experimenter's question (e.g., "Will you play with the blocks later today?") is itself sufficient to occasion subsequent doing. If that is so, the child's saying is irrelevant. How can we assess the role of the child's saying? By arranging opportunities for the child to either say or not say. This is precisely the procedure called for by our definition of correspondence.

Alternatively, imagine the child who consistently promises to play with blocks and subsequently does so. Such say/do sequences do not necessarily imply control by saying, because the child might play with blocks even without promising to do so. A *reductio ad absurdem* is the person who promises to breathe and subsequently does so; we would hardly assert that saying controls breathing, because we expect breathing to occur regardless of the promise.

Our interest in the definition of correspondence was initially occasioned not so much by concern with the adequacy of the procedures reported by Guevremont et al. (1986) and widely used by other investigators (we suspect that our criteria have often been implicit in some of those procedures) as by variations among existing proposals for defining correspondence (e.g., Israel, 1978; Karlan & Rusch, 1982). We presented a contingency-space analysis because it has proven useful in clarifying other kinds of relations among events (e.g., between responses and eliciting stimuli in Pavlovian conditioning, and between responses and consequences in analyses of contingencies: Catania, 1971; Rescorla, 1967). In those accounts, contingency spaces provided a parsimonious system for organizing procedures that had previously been treated in heterogeneous ways. We therefore suggest that Stokes et al. (1987) need not fear that "the conceptualization may be more complex than is necessary" (p. 161) or that the "terminology in the contingency-space analysis may provide further confusion" (p. 162) or that our "analysis, taxonomy, and discussion of conditional probabilities may divert some attention from issues of actual control by verbalizations, that is, does correspondence occur?" (p. 162). Our proposed definitions should focus attention on appropriate procedures for demonstrating generalized correspondence, so that there can be no ambiguity in identifying it when it has been established.

In what follows, we use quotations from Stokes et al. (1987) as opportunities to comment on various issues relevant to the analysis of generalized verbal/nonverbal correspondences:

1. "Saying and doing is truly correspondence, as is saying not and not doing. Saying and not doing is truly noncorrespondence, as is saying not and doing" (p. 162). These sentences illustrate the problem of distinguishing specific instances from classes. The word "truly" notwithstanding, correspondence here seems to refer to particular say/do combinations rather than to generalized relations. Saying and doing can occur together not only as a result of correspondence training but also when saying and doing occur independently. The distinction is analogous to and as fundamental as that between particular responses and the operant classes into which they enter. Perhaps we need separate terms for particular instances and generalized classes of say/do combinations, parallel to the distinction between responses and operants.

2. "The term negative correspondence may be taken to mean, for example, that correspondence did occur, or that it did not occur in the predicted direction, or that no statement was made about the behavior and the behavior did not occur, or that there was a negative correlation between what was said and what was done" (p. 162). Not in our terminological system. We defined negative correspondence to refer to a negative correlation between saying and doing. The assertion that a supposedly technical term "may be taken to mean" any of four different things seems to us to illustrate

rather precisely the kind of problem our paper was intended to address.

3. "The relevant question is whether the content of the verbalization was related to the topography of the target behavior, not whether it was positive or negative. A description of the verbal/(non)verbal sequences would suffice without addressing positive or negative correspondence relationships" (p. 162). We find it difficult to imagine circumstances in which it is a matter of indifference whether verbal and nonverbal behavior are positively or negatively correlated. That is why we felt the distinction was worth making.

4. "Correspondence implies that a reliable relationship exists . . . that is more than correlational. A verbalization and subsequent (non)verbal behavior, for example, may covary systematically but both be occasioned by a third variable . . ." (p. 162). It is always possible to interpret correlations in terms of the effects on each term of third variables. Even when experimental control is demonstrated, it may be that the variable of interest has its effect only indirectly through some third variable that has not yet been measured. It is in the nature of contingencies that they involve correlations, and part of the business of experimental and applied analyses is to show that particular third variables cannot operate within particular settings. Such experimental concerns, however, are independent of the terminological questions that we raised in our account.

5. ". . . complex contingency histories and the role of language in occasioning temporally remote behavior should receive careful consideration. . . . From an applied and clinical perspective, the development of a relationship between a verbalization and relevant behavior is crucial. This is why it is important to have a procedure to facilitate the client's verbalization" (pp. 163–164). Quite probably so, but the measurement of such behavior may be independent of the procedures for generating it, in the sense that solving the problems of measuring correspondence may not tell us how to solve the problems of differentiating or shaping it or of tracking its development within natural environments. Although we regard it as important to emphasize these distinctions, we thoroughly agree that the topic of "remote control" by verbal behavior will be central to our future progress. We still have much to learn, and we look forward to more data on the progression from immediate say/do correspondences to those extended over time, on the role of contingencies in establishing such higher order behavioral classes (see Baer & Sherman, 1964, and Gewirtz & Stingle, 1968, on the class called generalized imitation), and on the ways in which such contingencies may operate in natural environments.

6. "Why not just reinforce the relevant behavior? The answer is in the usefulness of using correspondence training procedures to establish generalized control over various behaviors at remote times and places" (p. 164). Here we are again reminded that we must deal with classes of behavior rather than merely with specific instances. Perhaps this is "only the operant again," but if so its beauty has hardly been "undisguised" (see Stokes et al., 1987, p. 164). One reason may be that the classes involved are defined not only by environmental contingencies but also by the relations among other classes (e.g., the behavior classes of saying and of doing). In any case, we are pleased to be able to end our reply on this note of agreement, and we thank Stokes and his colleagues for this opportunity to clarify and expand upon our account of say/do contingency spaces.

REFERENCES

Baer, D. M., & Sherman, J. A. (1964). Reinforcement control of generalized imitation in young children. *Journal of Experimental Child Psychology,* **1,** 37–49.

Catania, A. C. (1971). Elicitation, reinforcement and stimulus control. In R. Glaser (Ed.), *The nature of reinforcement* (pp. 196–220). New York: Academic Press.

Gewirtz, J. L., & Stingle, K. G. (1968). Learning of generalized imitation as the basis for identification. *Psychological Review,* **75,** 374–397.

Guevremont, D. C., Osnes, P. G., & Stokes, T. F. (1986). Preparation for effective self-regulation: The development of generalized verbal control. *Journal of Applied Behavior Analysis,* **19,** 215–219.

Israel, A. C. (1978). Some thoughts on the correspondence

between saying and doing. *Journal of Applied Behavior Analysis,* **11,** 271–276.

Karlan, G. R., & Rusch, F. R. (1982). Correspondence between saying and doing: Some thoughts on defining correspondence and future directions for application. *Journal of Applied Behavior Analysis,* **15,** 151–162.

Matthews, B. A., Shimoff, E., & Catania, A. C. (1987). Saying and doing: A contingency-space analysis. *Journal of Applied Behavior Analysis,* **20,** 69–74.

Rescorla, R. A. (1967). Pavlovian conditioning and its proper control procedures. *Psychological Review,* **74,** 71–80.

Stokes, T. F., Osnes, P. G., & Guevremont, D. C. (1987). Saying and doing: A commentary on a contingency-space analysis. *Journal of Applied Behavior Analysis,* **20,** 161–164.

Received June 24, 1987
Initial editorial decision July 7, 1987
Final acceptance July 21, 1987
Action Editor, Brian A. Iwata